

tegument in the *Clusiaceæ*, as well as in the *Magnoliaceæ*, must be a true arillus.

The facts thus demonstrated will, Mr. Miers argues, necessarily change our views of the affinities of the *Clusiaceæ*, serving to bring the order into close proximity with the *Rhizobolaceæ*, a relationship long ago pointed out by Cambessèdes, founded upon their floral structure, but now rendered more evident by the great similarity observable in their extraordinary embryonal development. The latter family exhibits likewise an embryo with a gigantic radicle, and exceedingly small cotyledons, but here these are separated from the radicular body by a slender free caulicle or neck; now if we imagine the suppression of this caulicular extension, and the close approximation of the minute cotyledons to its monstrous radicle, there would be little or no difference in the structure of the embryo in the two families. While these circumstances tend also to draw closer the affinity of the *Clusiaceæ* to the *Hypericaceæ* and *Marcgraaviaceæ*, they tend to remove them far from the *Ternstroemiaceæ*, with which order they have been hitherto considered to be most intimately related. The farther consideration of the real affinities of the *Clusiaceæ* will be more fully examined by the author, who intends on a future occasion to treat of the organography, floral structure, and generic features of the whole family, restricted within the limits he proposes.

ZOOLOGICAL SOCIETY.

January 10, 1854.—H. F. Walter, Esq., in the Chair.

NOTES ON THE HABITS OF INDIAN BIRDS.—PART I.

BY LIEUT. BURGESS.

Order I. RAPTORES.

Family VULTURIDÆ.

Genus VULTUR.

VULTUR PONDICERIANUS. BLACK VULTURE.

This Vulture, as far as I have had opportunities of observing it, is much more common in the Deccan than either the large (*Vultur Indicus*) or the small brown Vulture (*Vultur Bengalensis*). I have never, however, seen more than two or three together, and these generally in the neighbourhood of the low ranges of hills which intersect that part of the country. As this bird has doubtless been already figured, it is not my purpose in these notes to enter into any further description of it, but merely to state what I have observed of its habits, food, manner and time of nesting, with any other information regarding it which I may have gained by actual investigation, or learned from credible sources. In its habits the Black Vulture, I should certainly say, is not gregarious; I do not remember to have seen more than four or five together, and then it has been for the purpose of partaking of a social meal. It flies in circles with the wings extended,

apparently without motion, and their tips pointed upwards, the legs being stretched out beneath the tail. The food of this Vulture consists of decaying animal substances; one which I shot drinking in a stream disgorged the entire leg of a cat. They breed during the months of February and March. In my notes taken at the time, I find the following :—“March 7. Found to-day, on the top of rather a low peepul (species of banian tree), the nest of the Black Vulture, on which one of the old birds was sitting. The nest, which was very large, was built of small sticks; it contained one egg. On the same tree a pair of the Black-headed Ibis (*Tantalus melanocephalus*, Lath.) had also built their nest; it contained four white eggs, very similar to those of the Pelican Ibis (*T. leucocephalus*).”—“March 19. Shot a male Black Vulture sitting on one egg; the nest was about a yard in circumference, built on the top of a thorny tree; it was composed of the thorny branches and other sticks below it. Among the thorny twigs forming the nest were two small nests, belonging to birds of the Passerine order, containing young.” In both these cases only one egg was found, of a pure white colour, $3\frac{8}{10}$ inches in length by $3\frac{1}{20}$ inches in width. In a third also, only one egg was found. The natives say that the Black Vulture lays two eggs, containing a male and female bird, but these facts seem opposed to such a statement.

Genus NEOPHRON.

NEOPHRON PERCNOPTERUS. EGYPTIAN VULTURE.

This is the most common and most efficient scavenger to be found in the cantonments of India. The last-mentioned Vulture feeds only, I believe, on decaying animal substances, but this bird usurps the place of the night-cart, removing the filth that would otherwise cause pestilence under a tropical sun. Any one who has been in India must have observed these disgusting-looking birds, from the young in its black to the mature in their white plumage, stalking with awkward gait in troops about the plains which generally surround an Indian military station, and no one can mistake the errand on which they are there. They breed during the months of February, March, and probably April. I have found their nests most frequently during the month of March. The nest, of a large size, is composed of sticks; in one case it was lined with rags and other refuse. It is generally built on tall trees, especially the banian. I found one on a ledge of rock on the side of a steep hill. The eggs are in general two in number, varying very much in colour, from white spotted with brown to a universal rust or liver-brown, darkest at the large end; $2\frac{7}{10}$ inches in length by $2\frac{1}{20}$ inches in breadth. One nest contained two eggs, one nearly white, the other equally brown. The young when first hatched are covered with a whitish-brown down, the down being whitest on the oldest. I give a description of a young bird brought to me on the 15th of April: “Beak and naked skin under the chin and about the gape and beak, dull greenish lead-colour, that over the eyes and on the forehead, lead. Irides dark; a white spot of down on the crown of the head; feathers on the neck and upper part of the

body tipped with ferruginous; back upper tail-coverts dull white, tipped with fawn; tail-feathers dull whitish fawn; lesser coverts whitish, tipped with ferruginous brown; quills greenish-black; legs and feet dull lead-colour; middle toe very long." In notes taken at the time, I find an entry that I saw an Egyptian Vulture on her nest as late as the 4th of May.

Family FALCONIDÆ.

Subfamily AQUILINÆ.

Genus AQUILA.

The eggs of the Eagle forwarded with these notes are those, I believe, of *Aquila fusca*, Gray (identical I imagine with *Aquila nœvia*, Gould), because that bird is by far the most common of the family in that part of Western India situated above the Ghauts. In the hilly portions of the country this bird may be seen perched on some elevated point of rock, sitting motionless, basking in the rays of the early sun; in the plains a solitary tree is almost sure to have one of them on its topmost branch. After the sun has been up some two or three hours, it commences its search for food, consisting chiefly, I believe, of hares. A Mharatta of high family, who had a very considerable knowledge of the habits of the birds of the country, told me that when an eagle discovers a hare in her form, which is generally in the grass at the foot of a bush, she will strike the bush with her wings to drive her victim out, before striking at it. That a large portion of this eagle's food consists of hares, I can attest, having found their skulls and bones in a nest. The nest, of a large size and composed of sticks, is built on tall trees; it contains two eggs, $2\frac{7}{10}$ inches in length and $2\frac{1}{10}$ inches in breadth, of a white ground, sprinkled over with reddish spots. They commence breeding as early as the latter end of November, and their eggs may be found up to the beginning of April.

Subfamily CYMINDINÆ.

Genus ELANUS.

ELANUS MELANOPTERUS.

I was never able to procure the nest and eggs of this handsome little Kite, but A. F. Davidson, Esq., of the Revenue Survey, a great sportsman and accurate observer of birds, told me that he obtained a young bird of this species and two eggs. The eggs were of a pure white colour, and about as large as the egg of the Indian Blue Pigeon. They were laid during the month of December. The stomach of one of these birds contained a rat.

From the colour of the eggs, and the manner in which the radiating hairs between the eye and beak meet over the ridge of the beak, it has struck me that this bird approaches nearer to the family of the Harriers than that of the Kites. Dr. Jerdon, in his notes, also says that "it frequents long grass and grain fields, over which it may be seen to hover like the Kestrel."

Subfamily BUTEONINÆ.

Genus MILVUS.

MILVUS AFFINIS. COMMON INDIAN KITE.

This is one of the most common, if not the commonest bird of prey to be found in India. Over every cantonment, town and village they are to be seen, sweeping round in graceful circles, ever and anon making a swoop, as their quick eye descries some offal thrown out from cook-room or hut, seizing it in their claws without alighting, and making their repast on the wing. So sudden and bold is their dash, that in two cases which occurred amongst my own servants, a Kite pounced on the contents of a plate which a servant was bringing from the cook-room, and was off almost before the man knew who the thief was, and whence he came. On another occasion the theft was not confined to meat, for either a silver fork or spoon was thus whipped up, and the thief, after being chased by the affrighted servant, and scared by his shouting, dropped it in a neighbouring garden. The poor servant doubtless thought that a Kite would never be suspected of having committed the theft. The food of this bird consists of every kind of animal refuse; and in providing two such efficient scavengers as this Kite and the Egyptian Vulture, in a country where all animal matter begins at once to decay and would form a constant source of pestilence, the hand of an all-wise and gracious God is clearly visible. The common Indian Kite builds its nest on tall trees, during the months of February, March and April. I saw a bird building as late as the 18th of April. The nest is composed of sticks, and contains as many as three eggs. I never found more than that number. The eggs are $2\frac{3}{10}$ inches in length and $1\frac{1}{2}$ inch in breadth, varying a good deal in colour, but generally of a whitish ground, more or less blotched and spotted with reddish-brown; in some the markings are chiefly at the large end, in others at the small.

MILVUS PONDICERIANUS. BRAHMINY KITE.

The eggs of this fishing Kite I have never seen, but I transcribe a note of its nest and young: "Feb. 27, 1850. Found the nest and two young birds of a species of fishing Hawk; the young ones were covered with whitish down, that on the back of a pale brown colour. The nest, formed of sticks and lined with mud, was built on a tall tree on the banks of the Bheema River, where these birds are common." As far as my observations go, I should say that this bird is decidedly a fishing Hawk. I have never seen it but either sailing along the course of a river or in the vicinity of water.

Genus PERNIS.

PERNIS CRISTATA?

I have not been able to ascertain anything relating to the nesting or the eggs of this Buzzard, but I was informed by a Mhar who saw it, of a curious habit of this bird; that when about to feed on a

comb, these birds spread their tail, and with it drive off the bees before attacking it. This was told me by a villager in a portion of thickly-wooded country where these birds are common.

Genus BUTEO.

BUTEO TEESA, Gray.

This is one of the commonest Hawks in the Deccan. Its plaintive cry may be heard in almost every tope of trees. It is easily distinguished by its white throat and silvery-white eyes. Dr. Jerdon, in his 'Catalogue of Birds of India,' says: "It frequents topes as well as open country, where it may be seen seated on low trees and bushes, an ant-hill, or the banks of rivers, whence it pounces on mice, lizards, small snakes, and various large insects and their larvæ." In the stomach of one of these birds I found a small snake entire, said to be of a very venomous kind, and a large locust; in that of another the remains of a full-grown rock quail. I am not aware whether the eye of all or most of the *Falconidæ* is strengthened by a ring of bony plates, as is the eye of the Golden Eagle, but it is the case in this bird. The Teesa breeds during the months of March, April and May. The nest is composed of sticks laid on the forked branches of the babool, mango and other trees. It sometimes contains as many as four eggs, $1\frac{8}{10}$ inch in length and $1\frac{6}{10}$ inch in breadth, white, spotted and dashed with brown.

I am very much inclined to think that the Teesa migrates during the monsoon, and returns to the Deccan about September, as I used not to hear its peculiar cry from the end of May to the middle of that month. Mr. Elliot, in his notes, mentions that *Circus cyaneus* and *Falco peregrinus* also migrate during the hot season and monsoon. I never noticed any of the Harriers about until September or October. The name of the Teesa in Mharata is 'Surudmar,' and in Hindoostani, 'Girgootmar,' meaning in both languages, I believe, 'the destroyer of lizards.' This name also applies, or is applied, to the Kestrel Black-wing (*Elanus melanopterus*), and Harriers.

The eggs sent with the others, I believe are those of one of the Harrier family, but of which I am unable to say. Most probably they belong to *Circus cyaneus* or *Circus Montagui*, as these are the most common. *Circus cyaneus* (*C. pallidus*, Sykes) is exceedingly common in the Deccan. In the grass lands amongst the hills, where quails abound, I have observed these birds beating particular spots of ground in the most regular manner, and when shooting, have found such spots to yield the best sport. I was told by a gentleman of the Civil Service, an ardent sportsman, that when shooting near Belgaum, many of the quails have been carried off by the Harriers before the beaters had time to secure them. They will fly over a plot of grass land, scanning every foot of it, and in the most careful manner beat the hedges and strips of bush and grass between the fields. They feed on lizards, mice, and small birds. I have been told that these birds remain to breed in the Deccan.

Subfamily FALCONINÆ.

Genus FALCO.

FALCO LUGGUR.

Of the true Falcons, the Luggur is the most abundant on the tablelands of Western India. The top of a tall tree in the midst of cultivation is its favourite resort. It breeds during the months of March, April, and probably May, making its nest, like that of all the birds of prey, of twigs and sticks on a tall tree, and lays four eggs, $1\frac{2}{10}$ inch in length, and $1\frac{6}{10}$ inch in breadth, of a reddish-white ground, spotted with two shades of reddish-brown, and thickly mottled with red-brown at the larger end; some are of a more yellow colour. As the plumage of the young birds has been already noted, any further description is unnecessary. In the stomachs of two birds of this species I found the remains of lizards.

FALCO CHICQUERA.

This handsome little Falcon is also common in Western India. It is a bird of rapid flight, and peculiarly active and energetic in all its movements. The natives told me that it is a great enemy to the sparrows, killing numbers of them. Its shrill scream quite betokens its fierce character. Like the last-named Falcon it lays four eggs, smaller in size, of a yellow-brown, mottled with a darker shade of the same colour, particularly at the larger end; in length $1\frac{4}{10}$ inch, and nearly $1\frac{4}{10}$ inch in breadth. It breeds during the months of February and March.

FALCO TINNUNCULUS. KESTRIL.

I have not been able as yet to discover whether this bird breeds in the Deccan or not.

DESCRIPTION OF A NEW SPECIES OF CYPRIS.

By W. BAIRD, M.D., F.L.S.

In a collection of shells procured some years ago by the British Museum, from M. Parreyss of Vienna, were two species under the name of *Nuculina*, the *N. donaciformis* and *N. triangularis*. Neither of these, however, belong to the Mollusca, both species being Entomostracans, and belonging to two totally different genera. The former I have described in the 'Annals' for 1850 (vol. vi. p. 89), under the name of *Estheria donaciformis*; the latter is the one now under consideration. It belongs to the genus *Cypris*, and I propose naming it *C. triangularis*. It may be characterized thus:—

CYPRIS TRIANGULARIS.

Shell or carapace of a triangular form, smooth and shining, of a transparent green colour; anterior and posterior extremities nearly of equal size; centre of carapace very gibbous; left valve overlapping the other at the lower margin.

Hab. Abeid, Kordofan. Mus. Brit.

ON A NEW SPECIES OF MUSOPHAGA.

BY JOHN GOULD, F.R.S., V.P.Z.S.

Mr. Gould exhibited a drawing, made by Lieut. J. H. Stack, and some feathers shed from the tail and wings of a species of *Musophaga*, a specimen of which had been living for the last ten years at St. Helena, in the possession of Lady Ross, the widow of the late Sir Patrick Ross, Governor of that island. From an examination of the drawing and feathers above mentioned, Mr. Gould was of opinion that the bird is a larger and more beautifully coloured species than any of the *Musophagæ* with which we were previously acquainted. Lady Ross informed Mr. Gould that it is nearly as large as a common hen-pheasant, and has a long, full, graduated blue tail, which is also the colour of the neck, the whole of the body and the wings, except the primaries, which are arterial blood-red, margined at the tips with a purplish-brown colour, similar to that in *Musophaga violacea*; the bill and the large denuded orbits are yellow; the irides brown; and the crown of the head surmounted with a high rounded crest of hair-like blood-red feathers. It was brought from the western coast of Africa, but the precise locality was unknown.

For this new species Mr. Gould proposed the name of *Musophaga Rossia*, in honour of its amiable owner. A perfect skin of this bird has since been sent to England, and a full description of it, accompanied by a figure, will be given in the Transactions of the Society.

January 24.—Dr. Gray, Vice-President, in the Chair.

ON THE SIZE OF THE RED CORPUSCLES OF THE BLOOD OF THE GREAT ANTEATER (*MYRMECOPHAGA JUBATA*).

BY GEORGE GULLIVER, F.R.S.

These have the usual form, but differ in their comparatively large size from those of most other Mammalia. Their average diameter is $\frac{1}{27\frac{1}{8}}$ th of an English inch, varying between the extremes of $\frac{1}{35\frac{3}{4}}$ th and $\frac{1}{22\frac{1}{6}}$ th of an inch.

All observers had come to the conclusion that there is no connection between the size of an animal and that of its blood-corpuscles, when I ascertained that in any truly natural family there is really such connection, however it may be in animals of such different orders as those to which the mouse and horse belong. The Great Anteater has larger blood-corpuscles than any yet examined in the other and smaller Edentata, though they are remarkably large in the Two-toed Sloth; and the Capybara has the largest ever seen among the Rodentia. Indeed, as this last order is characterized by a comparatively large size of blood-corpuscle, it might be supposed that in the great extinct species the corpuscles were larger than any ever measured in the Mammalia; and if any gigantic species allied to the Anteater should be found, its red corpuscles may be expected to be alike remarkable for comparative magnitude.

In the present species they are about the same size as in the Elephant, and are certainly, excepting those of this great pachyderma-

tous animal, the largest yet observed in the Mammalia, as may be seen by reference to the copious Tables of Measurements which I have appended to the English version of Gerber's Anatomy, and to my edition of Hewson's Works, published for the Sydenham Society. With the exception just mentioned, it is still a very interesting fact, that a simple examination of less than one hundredth of a grain of its dried blood would suffice to distinguish the Anteater from any other animal in the Society's Menagerie.

BOTANICAL SOCIETY OF EDINBURGH.

March 8, 1855.—Professor Balfour, President, in the Chair.

The following papers were read:—

1. "A Comparative View of the more important Stages of Development of some of the higher Cryptogamia and the Phanerogamia," by Charles Jenner, Esq.

This paper has appeared in the 'Annals,' p. 241.

2. "Notes of a Botanical Tour in the Channel Islands in August 1854," by Mr. C. Baxter.

The author does not appear to have added to the known flora of the Islands.

3. "On some Gall-like appearances on the Leaves of a species of *Chrysophyllum* from the Rio Negro collected by Mr. Spruce," by Mr. James Hardy.

These productions consist of a considerable number of deep brown, polygonal or suboblong spots, situated near each other on the under surface of the leaf, and occupying slight depressions. They are about 1 line in diameter, only slightly raised above the level of the leaf, and very densely covered with short, closely intertwined, crisp hair. From each of these, when perfect, arises a small subglobular wart, about three-fourths of a line in diameter, of a pale chestnut colour, and densely pubescent, with longer and nearly straight hair. The upper surface of the leaves opposite to these spots is slightly protuberant, and sometimes withered. Occasionally there is a small depression corresponding to the centre of the gall; but this is never pierced. The gall-formed portions are hollow in the centre, and in one of the largest something like the smooth walls of a cell were traced. They appear to have been the habitation of some insect, but are now empty. They have probably not attained their full growth, and this will account for the want of a definite nucleus.

4. "Extracts from a letter from Dr. Cleghorn, on the discovery by Major Cotton of the Gutta Percha plant in Malabar." Communicated by Professor Balfour. In his letter, dated 13th January 1855, Dr. Cleghorn remarks:—"Three days ago Major Frederick Cotton of the Madras Engineers made a discovery. Riding through the Wynnad district a week or two since, he discovered the Gutta Percha tree, and forwarded a specimen of the gum with a branch of the plant to me, from which it appears to be a true *Isonandra*. It is believed that the tree grows abundantly in the jungles of Malabar,